BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 9: e183306
doi: 10.3897/biss.9.183306

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Conference Abstract

Using NatureCounts to Support the Kunming-Montreal Global Biodiversity Framework in Canada

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Received: 22 Dec 2025 | Published: 23 Dec 2025

Citation: Jardine C, Lepage D, Horner K (2025) Using NatureCounts to Support the Kunming-Montreal Global Biodiversity Framework in Canada. Biodiversity Information Science and Standards 9: e183306. https://doi.org/10.3897/biss.9.183306

Abstract

Targets 20 and 21 of the Kunming-Montreal Global Biodiversity Framework establish that access to good data and innovative data products are crucial to halting and reversing biodiversity loss, and that biodiversity data access has implications for all targets of the framework. Birds Canada's NatureCounts platform*[1] seeks to meet these needs by supporting easy and accurate data collection, interpreting data to produce meaningful knowledge and data products, and sharing data according to the FAIR principles (Findable, Accessible, Interperable, Reusable) to support conservation action and policy.

NatureCounts supports the collection of robust biodiversity data by professional and volunteer-based monitoring programs. The NatureCounts mobile app and web interface are customizable data collection solutions that integrate standardized data from the field directly into a sharing-ready repository using a standardized schema. The flexible architecture accommodates nearly any monitoring protocol, while a user-friendly interface, unique tools, and instantaneous data upload incentivize adoption, encouraging FAIR data participation by projects of all types and sizes.

Data collected using these tools are uploaded to the NatureCounts database. Hosting over 250 million records, this massive repository holds endless potential for conservation

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applications. Tools including an online data explorer and R package facilitate easy data access by researchers and conservationists. Flexible data access permissions support the security of sensitive records and Indigenous data sovereignty.

Various data products support research and conservation, and directly address the targets of the Global Biodiversity Framework. For example, a dedicated workflow underpins the process of identifying Canada's Key Biodiversity Areas—spaces designated as vital to the conservation of biodiversity in Canada—in accordance with Target 3. Another uses the data to set and evaluate federal population goals for Canada's birds for the federal government, integrating biodiversity into decision making as per Target 14. A third feeds data directly into the Canadian process for identifying endangered species, addressing extinction risk as specified in Target 4 and seamlessly connecting data collection to policy.

NatureCounts also processes over 9000 requests for raw data yearly by the conservation community. Users query and filter the data, then access them either through a browser-based download portal or the dedicated *naturecounts* R package.* [2] To help NatureCounts data users interpret raw data, the Birds Canada GitHub page*[3] contains publicly available repositories and documents that detail workflows for processing and analyzing data accessed through NatureCounts. These well-documented, tested, and easily shared repositories ensure reproducible research practices.

To date, data from NatureCounts have supported over 4200 scientific publications and an immeasurable amount of unpublished work. Data from NatureCounts are used for species assessments, land use planning, impact assessment, academic research, climate change mitigation, and much more, allowing data from NatureCounts to be used in pursuit of nearly every target in the framework. Through the ongoing development of NatureCounts, Birds Canada aims to fulfill the goals of the Kunming-Montreal Global Biodiversity Framework, and make measurable progress for biodiversity in Canada.

Keywords

open data, data management, FAIR principles, data sharing, citizen science, data collection

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Presented at

Living Data 2025

Conflicts of interest

The authors have declared that no competing interests exist.

Endnotes

*1 https://naturecounts.ca/nc/default/main.jsp

*2 https://birdscanada.github.io/naturecounts/articles/index.html

*3 https://github.com/BirdsCanada